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Amdt. sent November 16, 2005
Reply to Office Action of August 16, 2005

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REMARKS/ARGUMENTS

Claims 1-31 are pending in the instant application.

In the latest office action, the Examiner objected the abstract because of informalities. The abstract has been amended and should now be allowable.

It is noted with appreciation that claims 6-7, 11-14, and 29 were objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form. Nonetheless, as discussed below, it is respectfully submitted that the claims as originally filed read over the cited art.

Claims 1-31 were rejected under 35 U.S.C. § 103(a) for allegedly being unpatentable over Dettinger et al., U.S. Patent Application No. 2004/0225689, in view of Mattson et al, U.S. Patent Application No. 5,551,003.

Claim 1 recites among other things, producing *a snapshot* of an application data store and producing journal entries of write operations issued from a host computer and storing the journal entries in a journal data store. When the free space in the journal data store falls below a first threshold value, then one or more journal entries are removed thereby *increasing the free space of the journal data store*. The removing action continues until the free space rises above a second threshold value.

Dettinger et al. discloses managing events in a data processing system using log files, such event logs, activity logs, history logs. *Paragraph [0001]*. The examiner asserted that the Dettinger log file 222 (Fig. 2) corresponds to the *snapshot* recited in the pending claims. The examiner has erred in making this correspondence. The claims clearly recite "snapshot of an application data store" (claim 1), and "snapshot of at least a portion of an application data store" (claim 8), for example. Dettinger's log file stores entries of events, activity history, and so on. Respectfully, Dettinger's log file (222, Fig. 2) in no way constitutes a *snapshot* of an application data store.

Dettinger et al. describe in paragraph [0006] "early file entries are overwritten when the maximum file size is reached." The examiner argues on page 3 of the office action that

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overwriting the earlier file entries when the maximum file size is reached thereby increases the

free space,

> "... when the free space falls below a first threshold value (i.e., when the maximum file size is reached), then removing one or more journal entries from the journal data store, thereby increasing the free space, i.e. by overwriting the earlier/old file entries... ."

While it is true that the action of overwriting early file entries with new file entries implies

removing the overwritten entries, this action in no way constitutes an increase in the free space.

When an entry is overwritten, the total size of the file remains unchanged (because the entry was

"overwritten"), and so there is no increase in free space in the log file. Dettinger et al. in no way

teaches deleting log files to increase free space. In fact, Dettinger et al. disclose (also in paragraph

[0006]) a first-in-first out approach, again, with the effect that the file size remains maximum, and

thus no increase in free space in the log file. Dettinger et al. therefore do not teach or suggest when

the free space falls below a first threshold value, then one or more journal entries are removed thus

increasing the free space of the journal data store until the free space rises above a second

threshold value, as recited in the pending claims.

Mattson was cited for showing a garbage collection process using a first threshold

to start the process and a second threshold to end the process. The examiner argues that it would

be obvious to apply the second threshold of Mattson to Dettinger because, "In doing so, not only

the minimum amount of free space is always present by using only the first threshold value but

also it would not exceed the second threshold value so it would avoid removing/deleting the

extra journal entries than required... ."

As understood, the examiner in essence argues that by incorporating the second

threshold into Dettinger then the free space "would not exceed the second threshold value so [to]

avoid removing/deleting the extra journal entries than required." However, Dettinger et al. in

fact avoids removing "extra journal entries than required" by not deleting any entries in the log

file, but rather by overwriting earlier entries. It therefore does not follow that one of ordinary

skill in the art would be motivated to combine Mattson in the manner proposed by the examiner.

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It is fundamental that to establish *prima facie* obviousness of a claimed invention, all of the claim limitations must be taught or suggested by the prior art. The examiner has failed to show the recited *snapshot*; as explained above, a log file of events and other system activity does not constitute a *snapshot* of a data store. The examiner has failed to show that Dettinger et al. alone or in combination with Mattson *increasing the free space of the journal data store*.

Independent claims 8, 15, 21, 26, 28, 30 were rejected on "arguments with respect to the rejection of claim 1." However, independent claim 8 recites, among other things, *updating a snapshot with at least one journal entry, and associating the space consumed by the journal entry with the free space thus increasing the free space*. In addition to the examiner's failure to show that Dettinger et al. teach a *snapshot* of a data store, the examiner has also failed to show the additional limitation recited in claim 8, and thus has not established *prima facie* obviousness as to claim 8.

Independent claim 15 recites, among other things, *removing one or more journal entries by identifying a selected snapshot and removing journal entries earlier in time than the selected snapshot*. In addition to the examiner's failure to show that Dettinger et al. teach a *snapshot* of a data store, the examiner has also failed to show the additional limitation recited in claim 15, and thus has not established *prima facie* obviousness as to claim 15.

Independent claim 18 recites, among other things, *updating the selected snapshot with one or more journal entries beginning with an oldest journal entry, thereby reducing the list of journal entries*. Independent claim 21 recites a step of *comparing sequence numbers*. T In addition to the examiner's failure to show that Dettinger et al. teach a *snapshot* of a data store, the examiner has also failed to show the additional limitation recited in claim 21, and thus has not established *prima facie* obviousness as to claim 18 and claim 21.

Independent claim 26 recites, among other things, *applying some of the journal entries to a snapshot in order to reduce the amount of space in the backup storage system that is consumed by the journal entries*. In addition to the examiner's failure to show that Dettinger et al. teach a *snapshot* of a data store, the examiner has also failed to show the additional limitation recited in claim 26, and thus has not established *prima facie* obviousness as to claim 26.

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Independent claim 28 recites, among other things, *updating a snapshot with some, but not all, of the journal entries thereby leaving some journal entries for a data recovery operation.* In addition to the examiner's failure to show that Dettinger et al. teach a *snapshot* of a data store, the examiner has also failed to show the additional limitation recited in claim 28, and thus has not established *prima facie* obviousness as to claim 28.

Independent claim 30 recites, among other things, *updating one of the snapshots according to one or more journal entries thereby increasing the amount of free space on the third storage mean.* In addition to the examiner's failure to show that Dettinger et al. teach a *snapshot* of a data store, the examiner has also failed to show the additional limitation recited in claim 30, and thus has not established *prima facie* obviousness as to claim 30.

Based upon the failure of the references relied upon the Examiner to teach or suggest the elements of independent claims 1, 8, 15, 18, 21, 26, 28, and 30, it is respectfully asserted that these claims, as well as claims 2-7, 9-14, 16-17, 19-20, 22-25, 27, 29, and 31 depending therefrom, are nonobvious.

The Section 103 rejection of the claims is believed to be overcome.

CONCLUSION

In view of the foregoing, Applicants believe all claims now pending in this Application are in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested. If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at 650-326-2400.

Respectfully submitted,

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